

Medical Information

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Toe Tourniquet Syndrome

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THERE HAVE BEEN several reports in the recent literature describing the strangulation of appendages by hair or thread in infants and young children. This appears most commonly to affect the toes of children wearing leotard-type clothing. The previously unreported problem of rotation of the partially amputated toe-tip after removal of the constricting hair was observed in a patient recently treated. It was felt that stabilization of the toe-tip by some means would be advisable in order to prevent this rotation. A second patient who had several hairs wrapped around the middle three toes of the right foot was seen later, and a single tacking suture of 5-0 nylon was placed with satisfactory in-line healing of the toe.

Reports of Cases

CASE 1.—An 11-month-old, black-haired, white girl was brought to the emergency room by her mother who stated that over the preceding week she had noticed that one of the child's toes had been gradually swelling and had turned a bluish color. The mother noticed a deep cut across the toe with a hair or thread projecting from it; she had attempted to remove it but was unsuccessful. The patient was referred to the surgery clinic where the fourth toe on the left foot was found to be swollen and dark colored, with a deep, circumferential laceration proximally from which a fine black hair was projecting (Figure 1). Upon exploration of the depths of the laceration the hair

was found to be wound around the toe several times. The hair was unwound and found to have encircled the toe three times. The child was followed at frequent intervals and rapid healing of the laceration was seen with resolution of the swelling and return of color. After three weeks the toe was completely healed with only slight discoloration (Figure 1). However, it was noticed that the soft tissues of the nearly amputated tip had rotated, shifting the nail in a medial direction so that it was abutting the adjacent toe as shown. Otherwise the child has done well.

CASE 2.—A 5-month-old white boy was brought to the pediatric clinic by his mother after she had noted discoloration and hair wrapping around the middle three toes of the left foot. The patient had a history of wearing footed sleep wear. On physical examination, hairs were noted

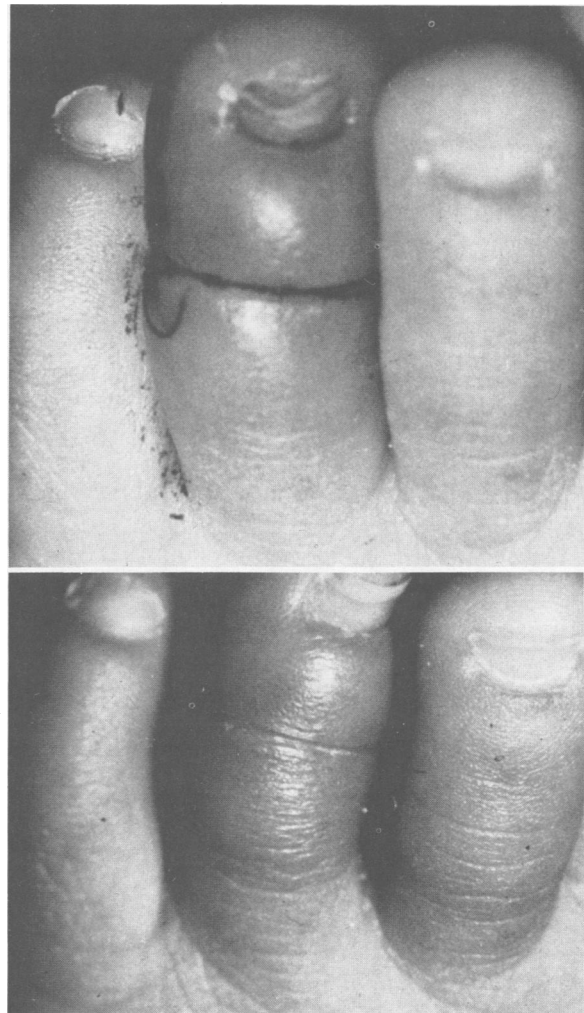


Figure 1.—(Case 1) Toe tip not stabilized showing resultant rotation.

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wrapped around the middle three toes of the left foot (Figure 2). Several hairs were unwound from the toes and it was found that the third and fourth toes were most severely involved with hair wrapped several times to the bone. Only the medial aspect of the second toe was involved and only superficially. The removed hairs were of the same color and texture as the mother's. Tacking sutures were inserted in the dorsal aspects of the third and fourth toes. One week later, the toes showed good healing in proper alignment (Figure 2). The sutures were removed at this time and on subsequent evaluation there was seen to be complete healing.

Discussion

Hair wrapping of a digit is uncommon and generally not well-known to the pediatrician or emergency room physician who usually sees such a patient initially. It has been confused with infection, trauma, congenital bands and other related problems. Congenital bands especially may be confused with this clinical entity since they also present as linear, well demarcated, constricting areas around an extremity. Differentiation is not difficult if the following points are considered. Congenital bands occur intrauterine and are pres-

ent at birth; however, hair wrapping is acquired and is not present at birth. In congenital bands no constricting agent is found, while in toe wrapping a hair or thread is always found. Congenital bands frequently occur on the legs as well as the digits; however, this has not been reported with hair wrapping. The treatment for hair wrapping is simple removal of the constricting agent, whereas congenital bands require serial Z plasty procedures for correction.

The first cases of hair strangulating an appendage were reported by Alpert and associates in 1965;¹ they described the qualities of hair that make it a particularly efficient constricting agent. Curran² reported an additional case in 1966 and emphasized the importance of differentiating this problem from other conditions such as infection. The term "toe tourniquet syndrome" was introduced by Quinn³ in 1971 when he reported five cases and implicated leotard-type clothing as important in the cause of this condition. The importance of removing all loops of the strangulating hair or thread and a procedure for successfully accomplishing this was reported by Kerry and Chapman⁴ in 1973; however, an additional step to prevent rotation of the unstable tip of the toe should probably be incorporated. The incidence of tip rotation is unknown but this problem certainly does occur and must be considered especially when the soft tissue defect extends to the bone. Placing a single small suture, applying steri-strips or even splinting the toe for three to four days would probably prevent this complication.

Summary

Two cases of infants with partial amputation of the toe secondary to hair strangulation are presented. Although the constricting hair was successfully removed from the first patient and the toe healed satisfactorily, rotation of the tip caused the nail to impinge upon the adjacent toe. In the second patient a single tacking suture was used to stabilize the distal tip and rotation did not occur. The problem of tip rotation could lead to discomfort or disability and should be prevented by stabilization of the toe-tip after removal of the constricting hair.

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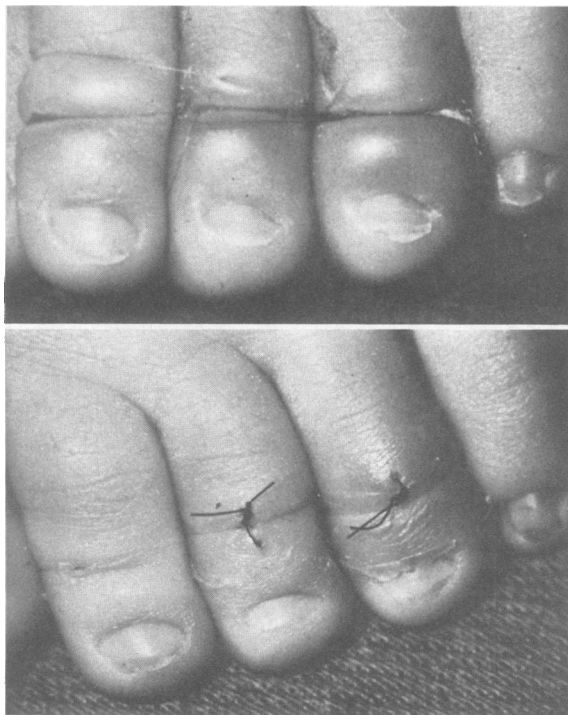


Figure 2.—(Case 2) Toe tip stabilized with 5-0 Nylon suture showing good alignment.